Trig Final (Practice v10)
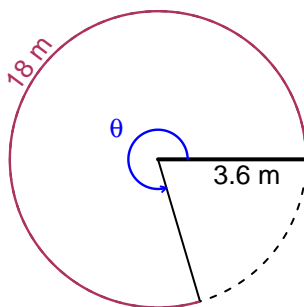
- You can use a calculator (like Desmos)
- You should have a unit-circle with special angles and coordinates marked.
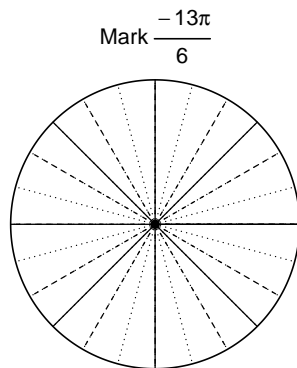
Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The radius is 3.6 meters. The arc length is 18 meters. What is the angle measure in radians?
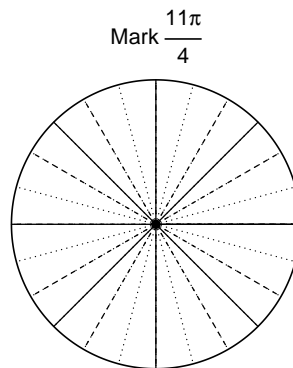

Question 2

Consider angles $\frac{-13\pi}{6}$ and $\frac{11\pi}{4}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\cos\left(\frac{-13\pi}{6}\right)$ and $\sin\left(\frac{11\pi}{4}\right)$ by using a unit circle (provided separately).

Mark $\dfrac{-13\pi}{6}$

Find $\cos(-13\pi/6)$

Mark $\dfrac{11\pi}{4}$

Find $\sin(11\pi/4)$

Question 3

If $\cos(\theta) = \frac{-33}{65}$, and θ is in quadrant III, determine an exact value for $\sin(\theta)$.

Question 4

A mass-spring system oscillates vertically with an amplitude of 4.81 meters, a midline at $y = -7.24$ meters, and a frequency of 6.23 Hz. At $t = 0$, the mass is at the maximum height. Write an equation to model the height (y in meters) as a function of time (t in seconds).